

Garfield Bay Resort (PWS# 1090221)
SOURCE WATER ASSESSMENT REPORT

November 14, 2002



State of Idaho
Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR GARFIELD BAY RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Garfield Bay Resort, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Garfield Bay Resort* describes factors used to assess susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Garfield Bay Resort is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Well Construction.

The former Garfield Bay Resort water system, PWS# 1090221, serves an RV park and several residences located on Lake Pend Oreille about 6 miles east of Sagle, Idaho. The resort restaurant/ bar is no longer open. Drinking water is supplied by an 8-inch cased well located in a grassy area at the eastern end of the resort. The well, drilled into a shale formation on the north side of Garfield Bay in 1995, is 545 feet deep. The steel casing extends from 18 inches above the surface to 38 feet below, terminating in hard blue shale. The well is lined to its full depth with PVC that is perforated from 225 to 245 feet; from 425 to 445 feet; and from 525 feet to the bottom of the well. The static water level is 80 feet below ground surface and production was estimated to be 16 gallons per minute. The 30-foot deep surface seal ends in broken shale. Except for a minor variation in casing wall thickness, the well meets current Idaho Department of Water Resources construction standards. No deficiencies in wellhead and surface seal maintenance were noted when the system was inspected in 1997.

Well Site Characteristics.

Hydrologic sensitivity scores for wells are derived from the soil drainage classification inside the recharge zone boundaries and from information on the well log. Soils in the well recharge zone delineated for the Garfield Bay Resort well are generally moderately well drained to well drained. Soils in this drainage classification provide little protection against migration of contaminants toward the well. The well log shows 29 feet of broken shale and gravel, then 6 feet of broken shale lying over 33 feet of hard shale at the well site. During drilling, water was first encountered in the stratum beginning 69 feet below the surface. No clay lenses are present above the water table.

Potential Contaminant Inventory.

Land inside the recharge zone delineated for the Garfield Bay Resort well is put to commercial, residential and recreational use. In addition to the resort and RV park, the delineated area encompasses part of a public campground and a golf course. Inorganic, synthetic and volatile organic chemicals can be associated with these land uses. The well is situated above the flood plain, about 300 feet from the shore of Lake Pend Oreille. The well needs to be tested to determine whether the well is hydraulically connected to the lake. Surface water, a potential source of microbial contaminants, covers about 20 percent of the area delineated for the Garfield Bay Resort well.

Water Quality History.

Garfield Bay Resort has had no water quality problems. Tests for total coliform bacteria have all been negative since the well was drilled in 1995. Annual nitrate tests show concentrations ranging from undetectable levels to 0.024 mg/l. The Maximum Contaminant Level for nitrates is 10 mg/l. The system has occasionally failed to monitor as required.

Susceptibility to Contamination.

An analysis of the Garfield Bay Resort well, incorporating information from the public water system file and the potential contaminant inventory, ranked the well moderately susceptible to all classes of regulated contaminants. Risk factors related to local geology added the most point to the final susceptibility scores. The ground water susceptibility worksheet for your well is on page 6. Formulas used to compute final scores and rankings are at the bottom of the worksheet.

Source Water Protection.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure water quality in the future is to act now to protect water supply resources.

Garfield Bay Resort has a good water quality history. The well head and surface seal appear to be maintained in accordance with, *Idaho Rules for Public Drinking Water Systems*. Photographs in the public water system file for Garfield Bay Resort show steel fence posts surrounding the wellhead to protect it from collision damage. Necessary repairs to the pump house floor were attended to promptly following the 1997 sanitary survey. The system owner should consider developing a written testing and maintenance schedule so important tasks don't get overlooked when management of the resort changes hands. All maintenance personnel need to be trained to keep potential contaminants like fertilizer and pesticides at least 50 feet from the well.

A voluntary measure every system should employ is development of an emergency response plan. There is a simple, fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process.

Because Garfield Bay Resort does not have direct jurisdiction over the entire recharge zone for its well, it will be important to form partnerships with neighboring landowners to regulate land uses that can degrade ground water quality. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

Assistance.

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning. Numerous ground water stewardship sites on the Internet help well owners assess everyday activities for their potential impact on drinking water quality.

Coeur d'Alene Regional DEQ Office	(208) 769-1422
State IDEQ Office	(208) 373-0502

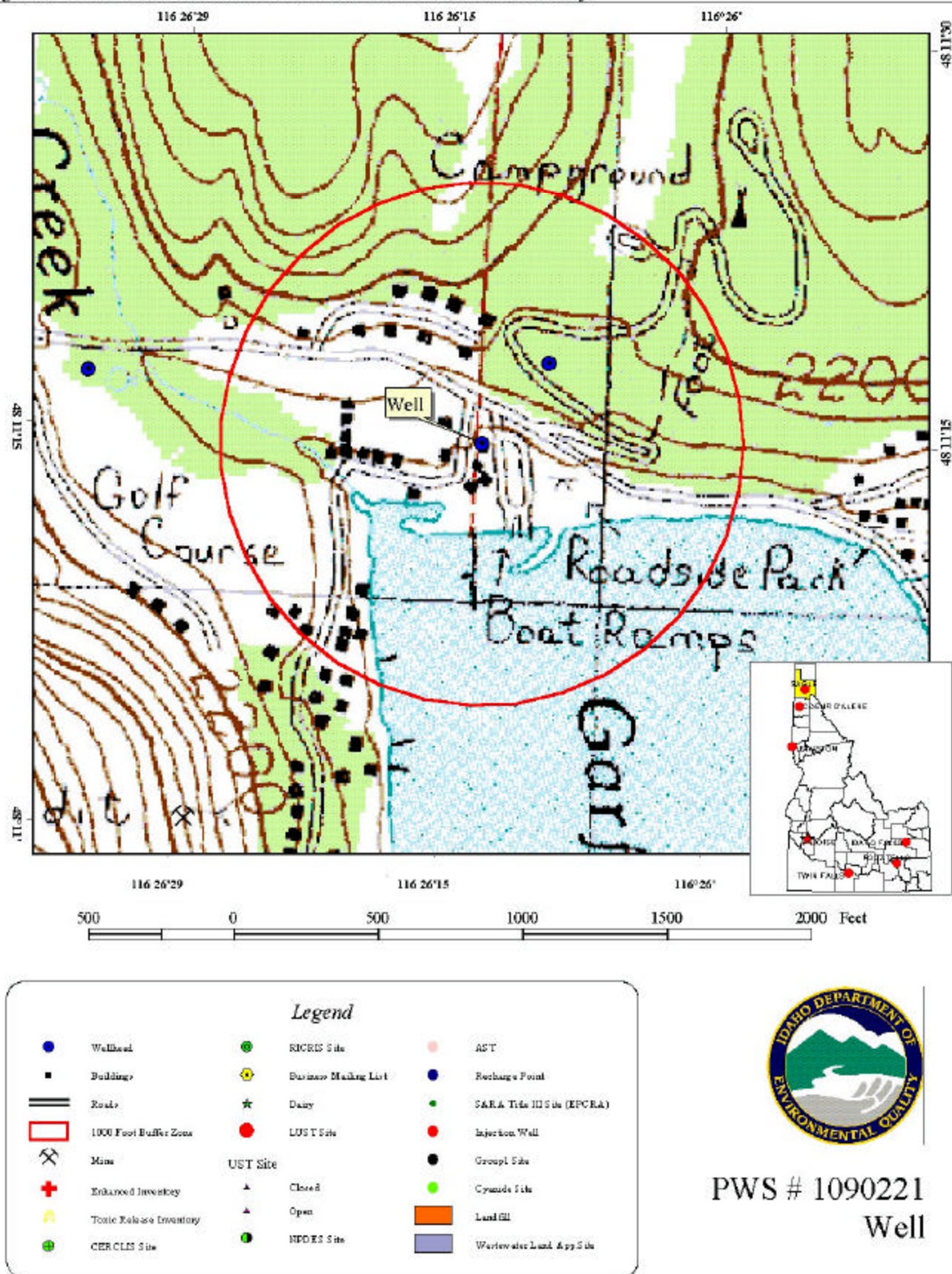
DEQ Website: www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Idaho Rural Water Association Website: www.idahoruralwater.com

Home * A * Syst Website: www.uwex.edu/homeasyst

Figure 1. PWSNO 1090221 Delineation and Potential Contaminant Inventory.



Ground Water Susceptibility

Public Water System Name :

GARFIELD BAY RESORT

Well # :

WELL #1

Public Water System Number :

1090221

10/8/02 8:26:45 AM

1. System Construction		SCORE			
Drill Date	8/8/95				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1997				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	Casing yes, Seal No	1			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		1			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	Broken Shale	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		6			
3. Potential Contaminant / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use	Resort, Campgrounds	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
Potential Contaminant Source/Land Use		2	2	2	2
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	YES. GOLF COURSE, SURFACE WATER	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
4 Points Maximum		1	1	1	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Agricultural Land Use	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		3	3	3	2
Cumulative Potential Contaminant / Land Use Score		5	5	5	4
4. Final Susceptibility Source Score		9	9	9	10
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

0 - 5 Low Susceptibility
 6 - 12 Moderate Susceptibility
 > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.